

REMARKS

Claims 1-34 are currently pending. Claims 1-8, 10-17, 20-28 and 31-34 are rejected and Claims 9, 18, 19, 29 and 30 are objected to as containing allowable subject matter, but are dependent upon a rejected base claim.

Applicant has amended independent Claim 1 and Claim 20 to clearly define calcia and the amounts in which it is added.

35 USC § 112, Second Paragraph

Examiner rejects claims 1, 10-20, 24, and 31-34 as being indefinite. Examiner states "the claims recite the inclusion of calcia in the refractory. 'Calcia' is known in the art to mean CaO." Examiner continues that "the claims include calcium hydroxide to be within the meaning of calcia, which has not traditionally been included within the meaning of calcia. In view of this, any calcium and oxygen-containing compound is considered to be within the meaning of the term "calcia."

Applicant has defined "calcia" to mean an independent calcium source such as calcium hydroxide and/or calcium oxide (see page 6, lines 16-17 and page 7, lines 11-13). Calcium hydroxide is formed when calcium oxide is reacted with water. Applicant has not deviated from this meaning of the word "calcia" throughout the Specification or Claims.

Therefore, Applicant has made reasonably clear the boundaries of the subject matter for which patent protection is sought. Thus, a claim may not be rejected solely because of the type of language used by an applicant to define the subject matter for which patent protection is sought. Applicant has specifically defined what is meant by "calcia" in the Specification. So, although Examiner cites a reference as to its "traditional" meaning, Applicant defines it to mean calcium oxide or calcium hydroxide, which is not adverse to the dictionary meaning of "calcia". Additionally, Applicant defines what is meant by "calcia" in Claims 2, 3, 5-7, 10, 14-16, 21-22, and 25-27, which is to be considered part of the Specification.

Additionally, Examiner has not established that one of ordinary skill in the pertinent art, when reading the claim in light of the supporting specification, would not have been able to ascertain with a reasonable degree of precision and particularly the specific area set out and circumscribed by the claim. Whether a claim is invalid or unpatentable for indefiniteness depends on whether those skilled in the art would understand the scope of the claim when the claim is read in light of the specification. Terms of a claim carry their ordinary meaning, unless it appears that the inventor used them differently. To determine if a patent uses a term differently from its ordinary meaning, the specification and prosecution history should be considered (page 7, line 13, page 12, line 17, page 14, lines 9-12 and page 16, lines 15-19).

Examiner states "Claim 10 refers to calcium oxide whereas claim 4 (from which claim 10 depends) specifically states that the calcia is calcium hydroxide." Examiner questions whether "the calcium hydroxide [is] added in addition to the CaO, or in the alternative to the CaO?"

Applicant inadvertently used calcium hydroxide and has amended Claim 10 to reflect that the "calcium oxide" is in a concentration from about 3.5 percent..."

Examiner noted that "In claims 14-16, "the calcium hydroxide" lacks antecedent basis." Applicant has amended Claims 14-16 to be dependent upon Claim 3 wherein calcia is defined as being calcium hydroxide.

Additionally, Examiner rejected Claims 11-13, 17-19, 24, and 31-34 for failing to correct deficiencies of claims from which they depend. However, Examiner did not state what those deficiencies are.

Applicant is uncertain as to the deficiencies of Claims 11-13. Claims 11-13 are dependent upon Claim 1 and further defines the concentration of the sulfamic acid. Applicant has amended his Claims to include that Claim 12 is dependent upon Claim 11 and Claim 13 is dependent upon claim 12.

Applicant has amended Claims 17-19, wherein Claim 17 is dependent upon Claim 4 and Claim 18 and Claim 19 are dependent upon Claim 17 and 18, respectively. Therefore, the deficiencies of Claims 17-19 are corrected.

Claim 24 is dependent upon Claim 20 wherein the sulfamic acid, calcia, and wetting agent are further defined with regard to concentrations. Sulfamic acid, calcia, and wetting agent are all components of Claim 20. Additionally, Applicant has added that the remainder of the composition is a magnesia-based refractory.

With regard to Claims 31-34, they further define the refractory composition and the wetting agent of Claim 20 and the method of forming a monolithic lining. Applicant fails to find any deficiency in these claims based on the deficiencies of claims from which they depend and Examiner did not specify what those deficiencies are. Therefore, Applicant's have made no amendments to those claims.

35 USC § 102(b), U.S. Pat. No. 4,383,045 (Nagle et al.).

Examiner rejects Claims 1, 2, 4, 8, 11-13 and 17 as being anticipated by U.S. Pat. No. 4,383,045 (Nagle et al.). Examiner states "Nagle et al. discloses a gunning composition comprising magnesia, sulfamic acid, and calcium nitrate" and that "the reference discloses a magnesia raw material which contains 0.9% CaO" and therefore, "the reference discloses the use of 'calcia' in the ceramic composition in two separate ways.

Nagle et al. teach a refractory composition including a dry granular mixture of a magnesia-based refractory grain and up to about 10 percent by weight of sulfamic acid as a binder. Nagle et al. disclose a magnesium product that contains 0.9% CaO impurities. Applicant teaches a composition having 1 percent to 8 percent calcia, "calcium oxide or calcium hydroxide". Nagle et al. do not teach or disclose adding a separate source of "calcia". Calcium nitrate is not a "calcia" as defined by Applicant, nor as defined by Examiner, and one of ordinary skill in the art would not classify it as such based on Applicant's disclosure.

Additionally, Applicant is teaching a gunning composition "consisting essentially of" a 1) magnesia-based refractory, 2) sulfamic acid, and 3) calcia (calcium oxide or hydroxide). The composition may also contain a wetting agent. Nagle et al. teach boric acid, chrome oxide and calcium nitrate in their composition.

Therefore, Applicant respectfully contends that Nagle et al. do not teach "calcia" in two separate ways. Calcium nitrate is not considered "calcia" in neither reference documents provided by Examiner, by Applicants Specification, nor as defined by Examiner. One of ordinary skill in the art would not recognize the 0.9 percent CaO disclosed in the raw magnesia material as contributing to Applicants invention.

Examiner "notes that the reference discloses the use of calcium carbonate, and the claims recite the inclusion of calcia in the refractory." Examiner also states "in view of the discussion above with respect to definiteness of 'calcia,' calcium carbonate is presumed to be within the meaning of calcia.

Applicant respectfully traverses this rejection. Examiner states Nagle et al. references the use of calcium carbonate yet, Applicant cannot find any reference to calcium carbonate and notes only CaO impurities (see the chemical analysis of the Magnesia in col. 4). Additionally, Examiner comments that calcium carbonate is presumed to be within the meaning of calcia, yet in his 35 USC § 112, second paragraph arguments, argues against broadening the scope of term calcia to mean anything other than calcium oxide.

Therefore, Applicant respectfully requests Examiner to point out where Nagle et al. teach calcium carbonate is used in the formulation.

Applicant contends it is the formulation of the "3" components, a magnesia-based refractory; sulfamic acid; and calcia (and optionally a wetting agent), that provides the benefits seen in the present formulation.

35 USC § 102(b), JP 62-148377 ('377)

Examiner rejects claims 1-3, 5-7 and 10-16 as being anticipated by JP 62-148377 ('377). Examiner states "JP '377 discloses [a] spray refractory composition comprising refractory aggregate, sulfamic acid and calcium hydroxide. See Table 1, page 440."

Applicant contends the JP '377 patent application teaches a rapid curing spray type refractory composition containing 1) basic refractory aggregate, 2) sulfamic acid, and 3) an aluminum sulfate binder wherein the Al-sulfate/sulfamic acid is in a 1:10 to 7:1 ratio.

Applicant is claiming a composition that "consists essentially of" 1) magnesia, 2) sulfamic acid, and 3) calcia (in the form of calcium oxide or hydroxide). Applicant does not have clay, bentonite, methyl cellulose, aluminum sulfate or boric acid in the formulation and based on the claim language these would be excluded from Applicant's composition.

35 USC § 103(a) over JP 62-148377 ('377)

Examiner rejects claims 20-22, 24-27 and 31-34 as being unpatentable over JP 62-148377 ('377) as applied to claims 1-3, 5-7 and 10-16 above and further in view of the knowledge of one of ordinary skill in the art.

JP '377 teaches the use of an aluminum sulfate binder wherein the aluminum sulfate/sulfamic acid is in a wt. ratio of 1/10 to 7/1. One of ordinary skill in the art would recognize this to mean that you need both aluminum sulfate and sulfamic acid in some type of ratio to recognize the benefits of the teaching of the JP '377 application.

Examiner states "JP '377 discloses a composition that anticipates claims 1-3, 5-7 and 10-16" and that the "reference differs from claims 20-22, 24-27 and 31-34 by failing to disclose the inclusion of a wetting agent to the composition." However, Examiner feels it would be obvious to one of ordinary skill in the art to use a wetting agent to cause wetting.

As mentioned above, JP '377 teaches an aluminum sulfate binder in a required wt. ratio with sulfamic acid (1/10 to 7/1). One of ordinary skill in the art would recognize from the teachings that both components are required to see the benefits. It would not be anticipated or obvious to replace the aluminum sulfate of the composition taught in the JP '377 application with the calcia of the present invention as aluminum sulfate and calcia are two totally unrelated chemicals and behave differently in different environments.

Therefore, it would not be obvious to replace the aluminum sulfate of the '337 application with calcia as suggested by Examiner. Nor would a person of ordinary skill in the art deviate from the '337 application and assume replacing the aluminum sulfate with calcia and adding a wetting agent would not change the character of the composition.

35 USC § 103(a) over Nagle et al. (U.S. Pat. No. 4,383,045)

Examiner rejects Claims 20, 21, 23, 24, 28, and 31-34 as being unpatentable over Nagle et al. as applied to claims 1, 2, 4, 8, 11-13 and 17 and further in view of the knowledge of one of ordinary skill in the art.

Examiner notes Nagle et al. fails to disclose the inclusion of a wetting agent to the composition and that it would be obvious to one of ordinary skill in the art to have used a wetting agent to cause wetting.

Nagle et al. teach a refractory composition including a dry granular mixture of a magnesia-based refractory grain and up to about 10 percent by weight of sulfamic acid as a binder. Nagle et al. disclose a magnesium product that contains 0.9% CaO impurities. Applicant teaches a composition having 1 percent to 8 percent calcia, "calcium oxide or calcium hydroxide". Nagle et al. do not teach or disclose adding a separate source of "calcia". Calcium nitrate is not a "calcia" as defined by Applicant, nor as defined by Examiner, and one of ordinary skill in the art would not classify it as such based on Applicant's disclosure.

Additionally, Applicant is teaching a gunning composition "consisting essentially of" a 1) magnesia-based refractory, 2) sulfamic acid, and 3) calcia (calcium oxide or hydroxide). The composition may also contain a wetting agent. Nagle et al. teach boric acid, chrome oxide and calcium nitrate in their composition.

Applicant fails to understand why Examiner feels that one of ordinary skill in the art would add calcia and a wetting agent to the formulation taught by Nagle et al. and assume the formulation would behave in the same way as the composition of a dry granular mixture of magnesia-based refractory grain and up to about 10% sulfamic acid as taught by Nagle et al.

Allowable Subject Matter

Examiner objects to Claims 9, 18, 19, 29 and 30 as being dependent upon a rejected base claim, but that they would be allowable if rewritten in independent form including all of the limitation of the base claim and any intervening claim. The prior art fails to disclose or suggest a refractory composition comprising magnesia, sulfamic acid and the claimed amount of CaO.

Based on the above arguments, Applicant respectfully contends that Examiner is requesting Applicant to unnecessarily limit the scope of the claims to a calcium oxide. Applicant clearly and distinctly defines calcia to mean calcium oxide and/or calcium hydroxide throughout the Specification and Claims and is not adverse to the typical meaning of calcia.

Applicant did amend Claim 1 to incorporate Claim 2 wherein the calcia is calcium oxide or calcium hydroxide and additionally incorporated Claims 5 and 8 into Claim 1 defining calcia and providing the concentration of calcia in the composition and more clearly defines the present invention over the prior related art.

Additionally, Applicant amended Claim 20 to define calcia and also to incorporate Claim 24 to include the amount of calcia and sulfamic acid required in the formulation.

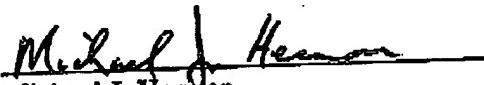
CONCLUSION

Applicant believes the application to now be in condition for allowance. Applicant more clearly defined his invention by defining in Claim 1 and Claim 20 the meaning of the term calcia. Additionally, Applicant has defined the amounts of calcia and sulfamic acid required to make the refractory composition.

Should Examiner not agree with Applicants' position, a telephone interview is respectfully requested to discuss any remaining issues and to expedite the eventual allowance of the application.

No extension fee is believed due for the filing of this amendment. Should any additional fees be required, however, please charge such fees to Minerals Technologies Inc. Deposit Account No. 13-3639.

Respectfully submitted,


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